REMARKS

Claims 1-10, 12, 14 and 16-20 are pending in the present application. Claims 1-9, 12 and 16-20 have been amended. Claims 11, 13 and 15 have been canceled. The specification has been amended.

Applicants respectfully request reconsideration of the application in view of the foregoing amendments and the remarks appearing below.

Objection to Specification

The Examiner has objected to the specification on the basis that the abstract includes drawing reference numerals and contains more than 150 words.

Applicants have replaced the original abstract with an abstract that does not contain any drawing reference numerals and contains fewer than 150 words. Therefore, Applicants respectfully request that the Examiner withdraw the present objection.

Objections to Claims for Informalities

The Examiner has objected to claims 5 and 16-20 because claim 5 is missing a period and the Examiner asserts that in claims 16-20 the phrase "late mode margin of the corresponding one of said plurality of timing paths" should read "late mode margin corresponding to one of said plurality of timing paths.

Applicants have amended claim 5 to include the missing concluding period.

Regarding the Examiner's assertion that the phrase "late mode margin of the corresponding one of said plurality of timing paths" should be changed, Applicants respectfully disagree. Clause (b) of claim 16 states, in slightly different wording than appears in the claims, that there is a delay element in each of the plurality of timing paths and each of the delay elements has a delay that is a function of the late mode margin of the timing path in which it is located. The alternative wording proposed by the Examiner would change the meaning of claim 16 in a manner unintended by Applicants.

The Examiner has objected to all of the dependent claims, i.e., claims 2-8, 10-15 and 17-20, because they begin with an indefinite article ("A" or "An") rather than the definite article, "The." The Examiner's assertion is that since the preamble of a dependent claim refers back to the preamble of the corresponding respective independent claim, the independent claim provides

antecedent basis, which requires the use of the definite article "The" in the dependent claim. Applicants respectfully disagree.

Applicants believe there are a number of reasons why this objection is improper. First, there no patent laws or rules that require the introductory portion of the preambles of dependent claims to follow the antecedent basis rule for claim limitations. Millions of patents have issued in which dependent claims starting with an indefinite article, i.e., either "A" or "An." Indeed, one of the foremost authorities on claim drafting, "Landis On Mechanics Of Patent Claim Drafting," Fourth Edition by Robert C. Faber and published by the Practicing Law Institute, provides numerous examples (see, e.g., § 11 of the "Landis" reference) in which the dependent claims start with an indefinite article.

Second, there is a logical reason for not starting a dependent claim with the definite article, "The." By definition, a dependent claim adds one or more limitations to the claim from which it depends. Say, for example, an independent claim is directed to an apparatus having the limitations A, B and C, and a dependent claim adds the limitations D and E, so that the dependent claim is directed to an apparatus having A, B, C, D and E as limitations. Clearly, the apparatus of the dependent claim is not the same as the apparatus of the independent claim. Since they are different, use of the antecedent basis rules for claim limitations is not proper. Rather, antecedent basis rules are to be used only when there is an identity as between the limitation of a dependent claim under consideration and the corresponding limitation in the claim from which that dependent claim depends. Clearly, when a dependent claim contains more limitations than the independent claim from which it depends, there is no such identity between the subject matter of the two claims.

The Examiner has objected to claim 4 and 7 because the phrase "the timing cycle" lack antecedent basis. Applicants respectfully disagree.

The preamble of claim 1 states, "A method of reducing the magnitude of an overall instantaneous current draw during a timing cycle in a synchronous integrated circuit . . . ." [Emphasis added.] The underlined phrase appearing in claim 1 provides antecedent basis for the occurrence of "the timing cycle" in each of claims 4 and 7.

For at least the foregoing reasons, Applicants respectfully request that the Examiner withdraw the present objections.

Objections to Claims Under 37 C.F.R. § 1.75

The Examiner has objected to claims 4, 7, 11, 13 and 15 under 37 C.F.R. § 1.75 as being in improper dependent form for failing to further limit the subject matter of the claim from which they depend.

Regarding claim 4, Applicants have amended this claim so as to depend from claim 1 instead of claim 3. Applicants have also removed the reference to the overall instantaneous current draw profile.

Regarding claim 7, Applicants have amended claim 7 to be directed to a step of removing at least one timing path from a peak portion of a timing cycle histogram.

Regarding claims 11, 13 and 15, Applicants have canceled these claims. That said, because Applicants have essentially incorporated the subject matter of these claims into independent claim 9, Applicants believe that amended claim 9 is nevertheless in proper form, since the overall instantaneous current draw profile sets up the antecedent basis for the portion of timing paths defining the peak of the profile.

For at least the foregoing reasons, Applicants respectfully request that the Examiner withdraw the present objections under 37 C.F.R. § 1.75.

Rejections Under 35 U.S.C. § 112, Second Paragraph

The Examiner has rejected claims 2, 4, 5, 7, 8, 12 and 16-20 under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter of the invention.

In particular, regarding claim 2, the Examiner asserts that the step of fixing early mode problems is indefinite. In making this rejection, the Examiner states that Applicants fail to "particularly point out how early mode problems may be fixed." Present Office Action, at numbered item 11. Applicants respectfully disagree.

Applicants fail to see how the step of fixing early mode problems is indefinite. The early mode problems are either fixed or they are not. There is no indefiniteness. Applicants believe the Examiner may be making an argument for the lack of enablement under 35 U.S.C. § 112, first paragraph. However, even if this is so, claim 2 does not fail. The fixing of early mode problems (as stated in the present application) is well known in the art. U.S. patent law does not require applicants to disclose subject matter that is well known in the relevant art. If the Examiner believes that claim 2 is not enabled, Applicants respectfully request that the Examiner

provide evidence that someone skilled in the art would not know how to fix early mode problems.

Regarding claim 12, the Examiner asserts that the phrase "said late mode problems" lacks antecedent basis. Applicants have amended claim 12 so that the phrase at issue reads "said early mode problems." There is clear antecedent basis in claim 12 itself for "early mode problems."

Regarding claims 4, 7 and 16-20, the Examiner asserts that the phrase "each one of at least some" is indefinite because the metes and bounds of this phrase are indeterminable. Applicants respectfully disagree.

When one wants to refer to individual items in a group of items it is customary to say "each one of the several items." When one wants to refer to more than one item in a set of a plurality of items it is customary to say "at least some of the plurality of items." Putting these two common expressions together so that the "several items" of the first phrase are the more than one item, i.e., the "at least some of the plurality of items," of the second phrase, the result is "each one of at least some of the plurality of items." The plain and ordinary (and definite) meaning of this is manifestly clear. It simply means "each of several of the items in the plurality of items." Consequently, Applicants respectfully assert that the phrase "each of at least some" is indeed definite.

For at least the foregoing reasons, Applicants respectfully request that the Examiner withdraw the present rejections under 35 U.S.C. § 112, second paragraph.

Provisional Rejection Under 35 U.S.C. § 102(e)

The Examiner has provisionally rejected claims 1-20 under 35 U.S.C. § 102(e) as being anticipated by co-pending U.S. Patent Application Serial No. 10/605,605 ("the '605 application").

The common assignee of the present application and the '605 application has expressly abandoned the '605 application as evidenced by the attached copy of the Express Abandonment Under 37 C.F.R. § 1.138 Form PTO/SB/24 and accompanying papers faxed to the U.S. Patent and Trademark Office on February 17, 2006 (Attachment A).

Since the '605 application has been expressly abandoned, the present provisional rejection is moot. Therefore, Applicant respectfully requests that the Examiner withdraw this rejection.

Provisional Statutory Double Patenting Rejection Under 35 U.S.C. § 101

The Examiner has provisionally rejected claims 1-20 under 35 U.S.C. § 101 as claiming the same invention as co-pending U.S. Patent Application Serial No. the '605 application discussed above with respect to the provisional rejection under 35 U.S.C. § 102(e).

The common assignee of the present application and the '605 application has expressly abandoned the '605 application as evidenced by the attached copy of the Express Abandonment Under 37 C.F.R. § 1.138 Form PTO/SB/24 and accompanying papers faxed to the U.S. Patent and Trademark Office on February 17, 2006 (Attachment A).

Since the '605 application has been expressly abandoned, the present provisional rejection is moot. Therefore, Applicant respectfully requests that the Examiner withdraw this rejection.

Rejection Under 35 U.S.C. § 103

Kojima et al.

The Examiner has rejected claims 1-3, 9, 10 16 and 16 under 35 U.S.C. § 103 as being obvious in view of U.S. Patent Application Publication No. 2003/0014724 to Kajima et al., stating that Kajima et al. disclose all of the limitations of these claims except for the specific use of the terminology "early mode" and "late mode" as appears in the rejected claims. The Examiner then asserts that it would have been obvious to a person having ordinary skill in the art at the time of the invention that, although the terminology of the rejected claims is different from the Kojima et al. publication, the rejected claims and the Kojima et al. publication are essentially directed to the same subject matter. Applicants respectfully disagree.

In one embodiment (the "Fourth Embodiment" of paragraphs [0119] through [0140]), Kojima et al. disclose a method of reducing peak current so as to reduce noise. The method involves defining an objective function for a plurality of clock paths and optimizing the function as a function of a constraint, i.e., the delay for each flip-flop circuit does not overreach the skew boundary. Once an initial solution for the delays is obtained, the multi-step process described in paragraphs [0127] through [0136] of the Kojima et al. publication is performed.

Regarding independent claim 1, as amended this claim includes the steps of stepping through the timing paths to determine whether or not the late mode margin of each is greater than zero and then, in response to a determination that a late mode margin is greater than zero, adding a delay to that timing path. In contrast, Kojima et al. describe a complex optimization scheme

that is completely silent of stepping-through a plurality of timing paths and assigning delays in direct response to this stepping through process. Indeed, the Kojima et al. scheme appears to require timing paths to be analyzed in sets, rather than singly as in amended claim 1. Since amended claim 1 is not rendered obvious by the Kojima et al. publication, neither are claims 2-8 that depend therefrom.

Regarding independent claim 9, as amended this claim requires the steps of determining if the late mode margin of each timing path is greater than zero and, if so, determining a delay in direct response to the determination that is a function of the late mode margin of that path. For reasons similar to the reasons just discussed relative to claim 1, Kojima et al. are silent on these steps. In addition, amended claim 9 requires the step of removing at least one timing path from the peak portion of a timing cycle histogram. Kojima et al. are likewise silent on this step. Since amended claim 9 is not rendered obvious by the Kojima et al. publication, neither are claims 10, 12 and 14 that depend therefrom.

Regarding independent claim 16, as amended this claim requires a plurality of delay elements distributed among the plurality of timing paths in response to redistributing at least some of the timing paths within a timing histogram. Kojima et al. do not disclose a plurality of delay elements distributed in this manner. Since amended claim 16 is not rendered obvious by the Kojima et al. publication, neither are claims 17-20 that depend therefrom.

For at least the foregoing reasons, Applicants respectfully request that the Examiner withdraw the present rejection.

Kojima et al. and Kovacs et al.

The Examiner has rejected claims 1-3, 9, 10 16 and 16 under 35 U.S.C. § 103 as being obvious in view of the Kajima et al., discussed above, and U.S. Patent Application Publication No. 2005/0050496 to Kovacs et al., stating that Kajima et al. disclose all of the limitations of these claims except for the removal of timing paths. The Examiner then asserts that Kovacs et al. disclose the concept of removing timing paths from a timing cycle histogram and further asserts that it would have been obvious to a person having ordinary skill in the art at the time of the invention to implement the Kovacs et al. wire removal technique in the Kojima et al. method. Applicants respectfully disagree.

The Kojima et al. publication is as described above. Kovacs et al. disclose a method of fixing timing violations in timing paths by removing one or more wires within a timing path and replacing the wire(s) with different wire(s) that correct the timing violations.

Applicants assert that the wire removal concept of Kovacs et al. is much different from the concept of the present invention of removing timing paths from a peak region within a timing cycle histogram. Kovacs et al. are simply changing the physical wire lengths within timing paths so as to remove timing violations. In the present invention, timing paths are removed from peak regions of timing cycle histograms so as to reduce overall instantaneous current draw. Consequently, it is Applicants' position that someone skilled in the art would not make the asserted combination.

Even if the combination were made, however, nothing in the combination teaches removing timing paths from a peak region of a timing path histogram as required by the claims. Again, the Kojima et al. do not disclose the use of histograms in connection with their method.

Applicants have incorporated the subject matter of claims 11 and 13 into independent claim 9. For at least the foregoing reasons, the Kojima et al./Kovacs et al. combination does not render amended independent claim 9 obvious. Applicants respectfully request that the Examiner withdraw the present rejection.

Office Action in Now Abandoned '605 Application

As discussed above in connection with the provisional rejections under 35 U.S.C. §§ 102(e) and 101, the assignee of the present application has expressly abandoned U.S. Patent Application Serial Number 10/605,605 (again, the '605 application), however, not before the U.S. Patent and Trademark Office issued an Office Action in that case.

Applicants attached hereto as Attachment B a copy of the Office Action issued for the '605 application, including the Notices of Reference Cited and cited non-patent publication accompanying that Office Action.

Applicants have reviewed the references cited in Office Action of the '605 application, including U.S. Patent No. 6,434,731 to Brennan et al. applied by the examiner, and believe that the claims of the present application, as amended, are allowable over those references.

CONCLUSION

In view of the foregoing, Applicants submit that claims 1-10, 12, 14 and 16-20, as amended, are in condition for allowance. Therefore, prompt issuance of a Notice of Allowance is respectfully solicited. If any issues remain, the Examiner is encouraged to call the undersigned attorney at the number listed below.

Respectfully submitted,

INTERNATIONAL BUSINESS MACHINES CORPORATION

By: _____

Morgan S. Heller II
Registration No.: 44,756
DOWNS RACHLIN MARTIN PLLC
Tel: (802) 863-2375
Attorneys for Applicants

Attachments:

A. Copy of Express Abandonment Form PTO/SB/24 and accompanying transmittal papers filed February 17, 2006, for U.S. Application Serial No. 10/605,605

B. Office Action from U.S. Patent Application Serial No. 10/605,605, including Notice of References cited

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